



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/836,645	04/17/2001	Andrew Zachary Glovatsky	199-1083	7315

7590 05/19/2003

Law Offices of John Chupa
& Associates, P.C.
28535 Orchard Lake Rd.
Suite 50
Farmington Hills, MI 48334

EXAMINER

CULBERT, ROBERTS P

ART UNIT

PAPER NUMBER

1763

DATE MAILED: 05/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/836,645

Applicant(s)

GLOVATSKY ET AL.

Examiner

Roberts Culbert

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 April 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 18-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 1.
- ☐ Interview Summary (PTO-413) Paper No(s). _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of Group I, claims 1-17, in Paper No. 5 is acknowledged.

Claims 18-20 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "said third layer". There is insufficient antecedent basis for this limitation in the claim. It is assumed for the purpose of examination that the "third layer" is the layer formed from the "third material".

Claim 11 recites the limitations "said first and said second layers" and "said provided first layer". There is insufficient antecedent basis for these limitations in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 5-7, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 5,451,721 to Tsukada.

Art Unit: 1763

Referring to Figures 1A-1D, Tsukada teaches a method for fabricating a multiplayer circuit board that includes providing a member having a central layer of a first material (10) that is operatively contained between first and second layers of a second material (12 and 14), placing a layer of a third material (18) upon certain portions of the first layer, thereby exposing at least one portion of the first layer (20), and placing a plurality of layers of the second material (22) on top of the third material effective to form a multi-layer circuit board having an aperture (24) that extends through the formed circuit board and terminates on the exposed of the first layer (16). The central layer is not resident within the aperture (claim 10). The third material is a dielectric (Col. 2, Lines 66-68), and the second material is copper (Col. 2, Lines 55-56). Tsukada further teaches the formation of a via-hole (32) through the circuit board. See Figure 1G. The formed via-hole reads on the registration slot and sighting window of claims 6 and 7 as broadly recited.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,451,721 to Tsukada in view of U.S. Statutory Invention Registration H1471 to Braun.

As applied above, Tsukada teaches the method of invention substantially as claimed, but does not teach a central layer of aluminum.

Braun teaches a method of forming a multi-layer circuit board that includes a layer of aluminum between the copper cladding. See claim 3.

It would have been obvious to one of ordinary skill in the art at the time of invention to provide a core made of aluminum in order to improve heat dissipation as taught by Braun (Col. 1, lines 45-50).

Art Unit: 1763

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,451,721 to Tsukada in view of U.S. Patent 4,528,064 to Ohsawa.

As applied above, Tsukada teaches the method of invention substantially as claimed, but does not teach placing solder within the aperture.

Referring to Figures 4E-4G, Ohsawa teaches a method of making a multi-layer circuit board that includes forming a conductive layer (23) on a substrate, forming a dielectric layer (26) over the conductive layer, forming a second conductive layer (33) over the dielectric layer, and filling in the formed aperture (32) with solder (Col. 4, Lines 35-36).

It would have been obvious to one of ordinary skill in the art at the time of invention to place solder in the aperture in order to connect the conductive layers while reducing the temperature required for deposition of the connecting material.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,451,721 to Tsukada in view of U.S. Patent 4,404,059 to Livshits.

As applied above, Tsukada teaches the method of invention substantially as claimed, but does not teach etching the central layer to form an air bridge.

Referring to Figures 1a-1g, Livshits teaches a method for forming a circuit board having a central metal layer (1) operatively contained between conductive layers (3)-(6). The central layer is partially removed by etching to form an air bridge (Col. 5, Lines 54-56).

It would have been obvious to one of ordinary skill in the art at the time of invention to form an air bridge as shown by Livshits in order to provide a crossover gap with a low dielectric constant and to reduce the weight and size of the circuit board by increasing the layout density of conductors on the panel surface as indicated by Livshits (Col. 3, Lines 55-60).

Allowable Subject Matter

Claims 11-17 are not rejected over the prior art.

Art Unit: 1763

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Roberts Culbert whose telephone number is (703) 305-7965. The examiner can normally be reached on Monday-Friday (7:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on (703) 308-1633. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

May 15, 2003

GREGORY MILLS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700